CLAIMS

1. A method of searching for functional defects in a description of a circuit, the method comprising:

simulating the functional behavior of said circuit in response to a first test vector;

wherein the simulation has a current state prior to said step of simulating;

automatically restoring the simulation to said current state without causing the simulation to pass through a reset state, said reset state being a state of the simulation in response to reset, said step of automatically restoring being performed after said simulating step;

simulating, after said step of automatically restoring, the functional behavior of said circuit in response to a second test vector.

2. The method of Claim 1 wherein said circuit includes at least a first controller capable of performing a plurality of first state transitions, and a second controller capable of performing a plurality of second state transitions, the method further comprising:

automatically determining, during each of said steps of simulating, for each pair of a first state transition and a second state transition performed simultaneously at least once, the number of times of said simultaneous performance, said

number indicating a measure of the functional testing of said description.

3. The method of Claim 1 further comprising:

automatically applying a predetermined rule to identify said second test vector.

4. The method of Claim 1 wherein said circuit includes at least a first controller capable of performing a plurality of state transitions, the method further comprising:

automatically enumerating said state transitions; and

automatically applying a predetermined rule to identify said second test vector;

wherein said step of automatically applying uses as input to said predetermined rule at least one of said state transitions.

5. The method of Claim 1 wherein said circuit includes at least a first controller capable of performing a plurality of first state transitions, and a second controller capable of performing a plurality of second state transitions, the method further comprising:

automatically determining, during each of said steps of simulating, for each pair of a first state transition and a second state transition performed simultaneously at least once, the number of times of said simultaneous performance; and

automatically applying a predetermined rule to identify said second test vector;

wherein said step of automatically applying uses as input to said predetermined rule at least one number determined by said step of automatically determining.

6. The method of Claim 1 wherein:

said current state is generated by simulating said circuit in response to a predetermined testbench.

7. The method of Claim 1 wherein said circuit includes at least one asynchronous clock signal, said asynchronous clock signal having a first clock state when the simulation is in said current state, the method further comprising:

setting the asynchronous clock signal to a second clock state, said second clock state being different from said first clock state;

wherein said step of setting is performed prior to said step of automatically restoring, and after said step of simulating with said first test vector.

8. A method for searching for functional defects in a description of a circuit, the method comprising:

automatically converting said description into a graph;

automatically examining said graph for an instance of a predetermined pattern;

simulating the functional behavior of said circuit in response to a first test vector in a plurality of test vectors;

wherein the simulation has a current state prior to said step of simulating;

automatically flagging, during said step of simulating, the functional behavior of said instance in violation of a rule associated with said predetermined pattern;

automatically restoring the simulation to said current state, said step of automatically restoring being performed after said simulating step;

simulating, after said step of automatically restoring, the functional behavior of said circuit in response to a second test vector.

9. The method of Claim 8 wherein said circuit includes a first controller capable of performing a plurality of first state transitions, and a second controller capable of performing a plurality of second state transitions, the method further comprising:

automatically determining, during each of said steps of simulating, for each pair of a first state transition and a second state transition performed simultaneously at least once, the number of times of said simultaneous performance, said

number indicating a measure of the functional testing of said description.

10. A method for measuring the functional testing of a description of a circuit, said circuit including a first controller capable of performing a plurality of first state transitions, and a second controller capable of performing a plurality of second state transitions, the method comprising:

testing the functional behavior of said circuit; and

automatically determining, during said step of testing, for each pair of a first state transition and a second state transition performed simultaneously at least once, the number of times of said simultaneous performance, said number indicating a measure of the functional testing of said description.